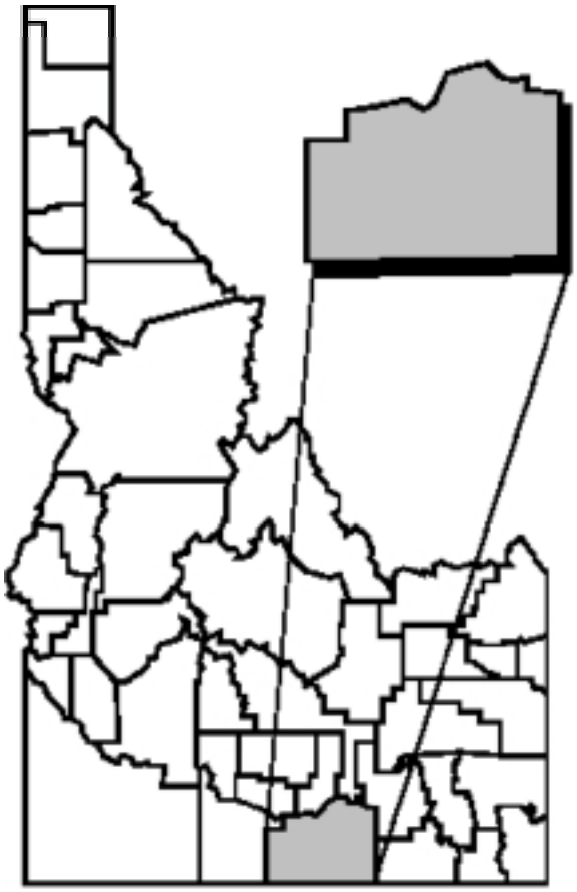


Cassia County Groundwater Quality Management Plan

June 2004

This plan meets the requirement set forth in Policy PM00-04 to address the Burley/Marsh Creek area of concern.

See the Appendix for the list of Cassia County Groundwater Quality Advisory Committee and Technical Advisory Committee members who contributed their time to the creation of this report.

For any questions regarding this report, contact Kathy Hieb, IDEQ engineering consultant, at 208-733-7393, or Bill Allred, IDEQ Twin Falls Regional Office, at 208-736-2190. More information can be found in the IDEQ webpage at http://www.deq.state.id.us/water/water1.htm#/groundwater; scroll to "Nitrates", then technical/geographical reports.

EXECUTIVE SUMMARY

Elevated nitrate levels can pose a health problem in both humans and animals. It can also be an indicator of other water quality problems. Nitrate levels tend to increase with other contaminants, such as when fertilizer or septic waste reaches a water supply. The federal regulatory level for nitrate concentration in human drinking water is 10 milligrams per liter (mg/l). Nitrate levels above this regulatory level have been associated with methemoglobinemia, which is the inability to absorb oxygen in the blood system. Methemoglobinemia is usually discussed with respect to risk in newborns and infants up to 6 months of age. However, adults with reduced stomach acidity, and people deficient in a particular enzyme, are also at risk. Several studies are underway to explore the possible link between long-term exposure to elevated nitrates and the incidence of health problems such as non-Hodgkin lymphoma, miscarriages, diuresis and hemorrhaging of the spleen. High-nitrate water is generally a health hazard to animals only when used with high-nitrate feed. Short-term use of water up to 40 mg/l nitrate is generally considered acceptable for animals.

The Idaho Department of Environmental Quality (IDEQ) formed the Ground Water Monitoring Technical Committee to compile the state's groundwater nitrate data. This committee delineated and identified twenty-five areas with elevated nitrate using groundwater data collected through 1999. Each of these areas had 25% or more of the sample wells exceeding 5 mg/l nitrate. These twenty-five areas were then ranked to determine the severity of the nitrate problem and to establish a work priority for agency resources. Ranking criteria consisted of population, existing water quality, water quality trends, and beneficial uses. The Burley/Marsh Creek area was placed as #3 on this Nitrate Priority list.

To address this issue, the IDEQ formed the Cassia County Groundwater Quality Advisory Committee, to design a management plan to prevent future nitrate level increases. The Committee decided to write a plan addressing the nitrate levels in the entire county rather than just the Burley/Marsh Creek area. This plan is intended to be a communication tool, not an enforcement tool. It will provide direction and guidance to the community and its leaders.

The Committee identified land use activities that could potentially affect nitrate levels in the county groundwater. In addition to regulations in place, recommendations for some activities are provided in this document. In no particular order, these activities can be summarized as follows:

- Residential – Owners of existing systems are encouraged to conform to guidelines and regulations established for new construction of wells and septic systems. Unused wells should be abandoned according to regulations. Residential landscaping and animal pasture activities should follow the suggestions in the agriculture and animal feeding operation portions of this document.

- Public-owned areas – Officials responsible for these areas should follow the recommendations in the Residential section of this plan.

- Municipal systems – Local authorities need to recognize that land uses in the drinking water protection areas can impact the quality of municipal drinking water.

- Agriculture – Irrigation and nutrient management must be considered together to reduce leaching of nutrients to groundwater.

- Animal feeding operations – Suggestions are given for surface water, wastewater, solid manure, and feedyard surfaces. Composting is recommended. This section of the plan applies to all sizes of animal feeding facilities.

- Recharge – Great care must be given to both natural and artificial recharge efforts.

The Committee will cooperate with the IDEQ, the Idaho State Department of Agriculture (ISDA), and the Idaho Department of Water Resources (IDWR) to implement projects supporting the goals in this plan. The Committee supports other groups and agencies that perform surveys, make presentations, and provide information relating to groundwater quality. Education, public awareness, and adoption of recommendations are key to this plan's success.

At this time, adoption of this plan is strictly voluntary. The IDEQ will continue to compile and analyze groundwater monitoring data collected by all the state agencies. The effectiveness of this voluntary plan will be evaluated, and possible changes may be discussed. If improvements to groundwater nitrate concentrations are noted, then regulatory intervention may be avoided.

(Note: In this document, whenever the term "nitrate" is used, it refers to the more scientifically correct term "nitrate as nitrogen" or "nitrate-nitrogen".

Table of Contents

Cassia County
Groundwater Quality Management Plan

Section I: Background

A. Introduction

In 1999-2000, the Department of Environmental Quality studied groundwater analyses from around the state with a focus on nitrate. Areas within the state were then placed on a Nitrate Priority Area list. Positions on this list were based on population, groundwater quality, the trend of the nitrate analysis, and other beneficial uses of the groundwater. The Burley/Marsh Creek area was ranked the third highest area of concern in the state. (Detailed information is provided in the Appendix.**)**

The Burley/Marsh Creek area is within Cassia County, located in the high desert of south-central Idaho. The area is bounded by the Albion Range and Rock Creek Hills on the southeast and southwest. The Snake River provides a physical boundary for the county line on the northern edge. The area slopes northward from an elevation of about 4,600 feet at Oakley to 4,150 feet at Burley.

Wells in the Burley/Marsh Creek area extract water from basalt of the Snake River Group to the northeast and east and possibly the Idavada volcanics to the south.

Fifty-five years of records (August 1948 - March 2003 from the Western Regional Climate Center) show the annual precipitation in Burley to be 9.91 inches and 10.90 inches in Oakley.

B. Authorities

1. The *Idaho Department of Environmental Quality (IDEQ) is designated as the primary agency* to coordinate and administer groundwater quality protection programs for the state (Ground Water Quality Protection Act of 1989, Idaho Code 39-120). Various state and local agencies have responsibilities for and are involved in implementing the Ground Water Quality Plan (adopted in 1992 and amended in 1996).

2. The *Groundwater Quality Rule* (IDAPA 58.01.11.400.02 and IDAPA 58.01.11.400.03) sets forth a number of alternative actions that the IDEQ may follow when a numerical groundwater quality standard has been exceeded, as well as when one has not been exceeded but significant degradation of the groundwater has been detected. The groundwater quality standard addressed in this plan is the primary (health based) drinking water standard of 10 mg/l nitrate.

3. In March 2000, the *Policy for Addressing Degraded Ground Water Quality Areas (Policy No. PM00-04)* was published.

   - One of the purposes of this policy is to set forth a process to identify, designate, and delineate areas where groundwater quality is significantly degraded as defined by rule.

   - Another purpose of *Policy Memo PM00-04* is to develop groundwater quality management strategies for improving groundwater quality in high priority areas based on current categorization and applicable standards with the use of local input. The Cassia County Groundwater Quality Advisory Committee (hereafter referred to the "the Committee") was formed as a pro-active measure to improve local groundwater quality through the adoption of the recommendations in this plan.

4. The IDEQ formed the Ground Water Monitoring Technical Committee to compile the state's groundwater data. This committee is comprised of technical representatives from local, state, and federal agencies and interested parties. In 2000, this committee delineated and identified twenty-five areas with elevated nitrate using groundwater data collected through 1999. To be included on this list, 25% of more of the sample wells needed to exceed 5 mg/l of nitrate.

   The twenty-five nitrate priority areas were then ranked to determine the severity of the nitrate problem and to establish a work priority for agency resources. Ranking criteria consisted of population, existing water quality, water quality trends, and beneficial uses. The ranking list was finalized in December 2001. For more information, refer to the following web site: http://ww2.state.id.us/deq/water/gw/nitrate/nitrate_ranking.htm. The Burley/Marsh Creek area was placed as #3 on this Nitrate Priority list.

5. *Cassia County Groundwater Quality Advisory Committee*

   The Committee consists of local area residents and government agencies representing a broad range of interests within the county. The IDEQ is the lead agency assisting the committee in developing a management plan to address the groundwater degradation in the county. Other agencies or groups providing technical support include:

   - Idaho State Department of Agriculture (ISDA)
   - Idaho Department of Water Resources (IDWR)
   - Idaho Rural Water Association (IRWA)
   - South Central District Health (Public Health)

- University of Idaho Cooperative Extension system (UI)
- Idaho's Well Drillers Association
- Idaho Crop Production Association

The Committee has met in open public forums since August 2002 to form the recommendations in this document. The Committee has agreed to promote and encourage a voluntary approach for addressing the groundwater contamination in the county.

Section II: Management Plan Goal

The ultimate goal of this plan is to reduce the levels of nitrate in the groundwater for the entire Cassia County. Data collected as of 1999 showed the Burley/Marsh Creek nitrate levels to average 6.36 mg/l with 17% of the wells exceeding the federal drinking water standard of 10 mg/l. It is anticipated that activities recommended herein should, within a reasonable time, lower the nitrate levels in the county's groundwater. Reducing nitrate levels may be a long-term process; therefore, the monitoring for this plan is anticipated to take years in order to determine a trend.

Another goal of this plan is to educate domestic well owners on the ground water quality of their individual wells. Well owners need to understand that it is their responsibility to have their ground water tested to determine potential health risks. Domestic wells do not require the governmental oversight and regular sampling that public water systems wells do. Domestic wells are included in some groundwater studies, and those well owners will be provided with their ground water data. It is generally recommended that homeowners test their wells for nitrate and bacteria. The cost to a domestic well owner is reasonable (2004 - about $20/constituent sampled), and laboratories are easily accessible (contact Public Health at 678-8221). Depending on these initial results, additional testing may be recommended.

Section III: Management Plan Approach

A. Introduction

1. This voluntary approach is based on the premise that the majority of people, when educated, will be willing to modify their activities in order to reduce nitrate loadings to the groundwater. The Committee believes that:

    a. Residents may choose to address the nitrate problem with more innovative solutions than a blanket regulation would provide.

    b. People will feel they are making choices rather than being forced to participate in a government program.

c. The voluntary approach provides the opportunity to encourage participation from those who are not currently regulated.

2. Periodically the state agencies and the Committee will jointly evaluate the progress and success of this management in reducing the nitrate levels in the county's groundwater. The Idaho Department of Environmental Quality (IDEQ) will provide oversight.

3. If the voluntary approach results in satisfactory progress towards reducing nitrate levels in the groundwater, mandatory requirements may not be necessary.

B. Groundwater Contamination Concerns

The Committee identified the land uses listed in the following table as those with potential to affect groundwater nitrate levels. They are listed in no particular order. Some land uses are already regulated to varying degrees by the government. In some cases, changes in governmental regulations are recommended. Best management practices and/or advice will be offered for land uses that are controlled voluntarily. Regardless of current regulation, the Committee has prioritized those land uses that would benefit from discussion.

Table 1: Cassia County Land Uses with Potential to Affect Groundwater Nitrate Levels:

Land Uses	Regulated	Voluntary	Committee Priority
Residential:			
Existing wells		X	X
New wells and septic systems	X		
Existing septic systems		X	X
Abandoned wells	X		X
Lawn/garden		X	X
Animal pasturing		X	X
Public-owned areas:			
Wells	X		
Septic systems	X		
Lawn/garden	X	X	X
Municipal systems:			
Drinking water	X		
Land application	X		
Agriculture:			
Cropland	X	X	X
Abandoned wells	X		X
Animal feeding operations:			
Small	X	X	X
Large	X	X	X
Recharge:			
Natural and artificial	X	X	X

Section IV: Objectives of this Management Plan

The Committee has set the following objectives:

1. Implement the management plan in a manner that encourages voluntary actions by members of the community to protect groundwater quality in Cassia County, so that a regulatory approach is not necessary.

2. Reducing nitrate loading to the groundwater without adversely affecting the economy.

3. Make the plan a communication tool that provides direction and guidance to the community and its leaders about the basic steps needed to prevent future nitrate level increases.

Section V: Methods for Implementing the Management Plan

The Committee considers the following methods most appropriate for implementing a voluntary action plan:

1. Representatives from IDEQ and volunteer committee members will make use of the following materials to make presentations at various events throughout the county:

    - This management plan.

    - The Committee developed a brochure specific to homeowners with existing wells. Brochures and other information have been collected for septic systems (IDEQ – "A Homeowners Guide to Septic Systems"), lawn/garden care (UI – "Watering Home Lawns and Landscapes"), and the health hazards of nitrate (UI – "Nitrate and Groundwater").

    - A poster board display was made which describes nitrate issues statewide and in Cassia County.

2. The Idaho Department of Environmental Quality has purchased a water quality test kit for the analysis of drinking water. A one-time only free water testing service at various sites throughout the county is being planned for Spring/Summer 2004. IDEQ and volunteer committee members will conduct this testing.

3. The Committee feels that education of youth is essential for this plan's success. With approval from the School District, the Committee would like to make presentations and send home information with school students. It is anticipated that sixth grade students would receive the bulk of this information.

4. The Committee would like to sponsor projects that will help reduce the nitrate levels in groundwater. The group is already interested in the Home*A*Syst program and various ventures using grant money, such as that offered by the Federal Clean Water Act – Section 319.

5. Another project being considered is the preparation of newspaper articles with educational information.

Section VI: Land Use Issues/Problems and Recommendations

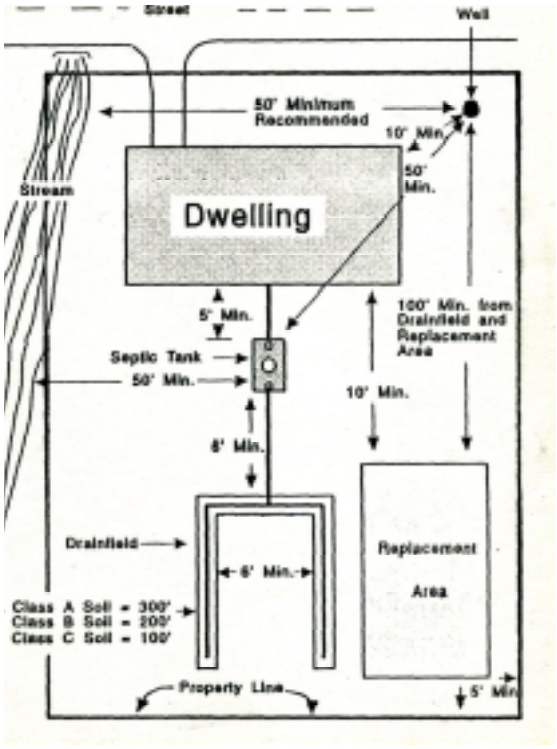
Land use: Residential

Wells (existing, new, and abandoned), septic systems, lawn/garden activities, and animal pasturing make existing and proposed residential development a potentially important localized source of groundwater nitrate contamination.

Many individual wells in the county were constructed before current requirements came into effect. These wells have the potential of contamination groundwater in a variety of ways. For example, contaminated water may move down an improperly sealed well casing from the land surface to groundwater. Another common problem occurs when wells drawing groundwater from different depths carry contaminants between aquifers. Wells that are no longer being actively used should be abandoned according to Idaho Department of Water Resources (IDWR) guidelines (IDAPA 37.03.09 Rule 25 Section 12-Abandoning of Wells).

Locating a septic system or other contamination source too close or up gradient from a poorly sealed well may cause the well to capture contaminated water and allow contaminated water to move further into the aquifer or between aquifers. The standard household septic system is not designed to effectively treat wastewater for nitrates. Properly operating systems deliver a certain amount of nitrate to the groundwater (an average of about 45 mg/l nitrate-nitrogen). In low-density settings, the impact to the groundwater is low because of dilution by the groundwater and the small volume of discharge spread over a large area. However, as densities increase, the combined discharge volume increases, thus overcoming the groundwater's ability to dilute the wastes, and increases the potential for noticeable groundwater contamination.

The following diagram illustrates the distance recommendations for wells and septic systems.



Lawn/garden activities and animal pasturing can also deliver nitrate to the groundwater. Not understanding the diagnosis and treatment of yard problems can result in excess or improper timing of fertilization and/or irrigation. Not knowing how to separate waters, feed, and waste products associated with large animals can also cause groundwater contamination. Residential landscaping and animal activities should follow the suggestions in the agriculture and animal feeding operation portions of this document.

Wells, septic systems, lawn/garden activities, and animal pasturing are discussed individually in the following sections.

Table 2: Residential - Wells - Existing:

About 56% (Idaho Department of Commerce - County Profiles of Idaho - 2000 data) of Cassia residents rely on their own domestic wells for drinking water.

The Committee recommends that all existing wells be brought up to today's standards to protect everyone's drinking water.

Issue/problem	Recommendations
Unknown water quality. Well and/or septic system location unknown. Well is within 50 feet of surface water or a septic tank. Well is within 100 feet of a drainfield. Unusual changes in the water: *seasonal differences of any kind *strange sounds from well (especially during irrigation season) *color, taste, or smell *volume of water Homeowner inspection reveals: *holes or cracks in cap or casing *cap is not tightly attached *casing is in a pit or basement *casing is not more than 12 inches above historical flood level *running water can be heard *no backflow prevention devices are installed *well is more than 20 years old *well was not drilled (It is a sandpoint or hand dug well.)	<u>Water testing:</u> a) Test the water for nitrate and bacteria annually. b) Use a certified lab – follow their instructions for sample collection. c) Discuss the results with Public Health (678-8221). <u>Well information:</u> a) Look for well log at home, office, safe deposit box, etc. b) Contact IDWR (736-3033), neighbors, well driller, or the electrician for information. Hint: Look for a label on the well's electrical box for contact information. c) If no well information is found, have the well inspected by a well driller. Get a copy of today's standards from IDWR and ask the driller to compare your well's construction to this list. <u>If there is a construction problem:</u> a) Consult IDWR (736-3033) before doing any modifications to the well. b) Contact Public Health (678-8221) before making changes to the septic system.
Liquid or solid chemicals are within 50 feet of well.	a) Move them away from the well now! b) Ask IDEQ (736-2190) what to do with the contaminated soil under these storage areas. c) Test your water as described above.
Chemigation is used.	Install back-flow prevention devices.

The Appendix contains a brochure developed by this Committee entitled "Private Well Owners".

<u>Table 3: Residential - New Wells and Septic Systems:</u>

Issue/problem	Recommendations
Where should a new well or septic system be located?	*Private residence:* a) Well drillers, Public Health (678-8221), Home*A*Syst (338-5900), and Planning and Zoning have information that can help you site the well and septic system.

Issue/problem	Recommendations
	Subdivision: a) Get information from Public Health (678-8221) on Nutrient Pathogen study requirements.
Who should install them?	a) Ask neighbors for recommendations. b) Verify that the driller has proper credentials.

Table 4: Residential - Existing Septic Systems:

Issue/problem	Recommendations
Homeowner does not know where the tank and drainfield are located.	a) *New owners* – Septic tank inspection and pumping were required before a loan could be approved. Ask your real estate agent or title company for documentation. b) *Long-term owners* – *If you haven't had your system pumped and inspected in the last 3 – 5 years, it's time to do it again. *Sources of information about your system include: previous owners, neighbors, a recommended septic tank service. c) If the inspection shows a problem, contact Public Health (678-8221). Correct it as soon as possible.
The last septic tank pumping and inspection are unknown.	
Septic system maintenance procedures are unknown.	Follow the maintenance guidelines from Public Health (678-8221).
The well is within 50 ft of the septic tank or within 100 ft. of the drainfield.	Test your water and follow the suggestions described in the above table "Wells – existing".

The Appendix contains the Idaho Department of Environmental Quality's publication "A Homeowner's Guide to Septic Systems".

Table 5: Residential - Abandoned Wells:

Issue/problem	Recommendations
Use discontinued: *poor water quality *low volume *bad construction	Contact IDWR (736-3033) and use their procedures for properly abandoning a well.

Table 6: Residential - Lawn/Garden:

Issue/problem	Recommendations
Irrigation	a) Overapplication of water is common. It moves water past the root zone and into the groundwater. b) Calculate your application rate (Appendix – UI "Watering Home Lawns and Landscapes"). c) Compare your application rate to the standard tables from the UI Cassia County Extension office (878-9461) or on-line at the AGRIMET site (www.usbr.gov). A general guideline is one inch every couple of days. d) Lawn - Water a lawn when footprints stay for more than a few seconds. e) Garden – Push your finger into the soil. If it comes out relatively dry, it is time to water. f) Watering slow and deep will encourage root growth of lawns and plants. Weeds prefer the frequent and shallow watering. g) Mulching will reduce water requirements. h) Irrigate at night or in the mornings when evaporation rates are lowest. i) Maintain the entire irrigation system.
Mowing	a) Lawns cut too short: * invite weeds * retard the development of strong roots * will not be able to hold as much water b) Leave at least some of the grass clippings on the lawn to provide fertilizer and hold moisture. c) Put the remaining grass clippings into a compost pile.
Compost	a) Make your own compost out of grass clippings, yard debris, and fruit/vegetable wastes. b) Make/buy a bin and keep it more than 50 feet away from a well or surface water. c) Turn the pile often. d) Do not add pet waste. e) Some large animal waste is ok. f) For advice contact: UI Cassia County Extension office (878-9461).
Fertilizer application	a) Get a soil test every 3 years. b) Get a soil test kit from a garden supply store or the UI Cassia County Extension office (878-9461). c) Review the results with a professional. d) Add your own compost if possible. e) If chemicals are used, follow all of the directions as to amount and timing of application and subsequent watering.

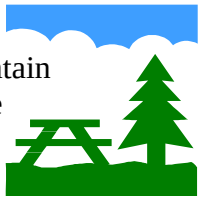
Issue/problem	Recommendations
Bugs and pests	a) Use the least toxic solution. b) Physically remove the bugs if possible. c) If you need to use chemicals, follow label directions carefully. d) Clean up debris and add to compost pile to reduce habitat and nesting sites.

See the Appendix for the University of Idaho publication "Watering Home Lawns and Landscapes".

Table 7: Residential – Animal Feeding Operations:

Issue/problem	Recommendations
Animal pasturing	Following the recommendations in the Agriculture and Animal Feeding Operations portion of this plan.

Land use: Public-owned areas

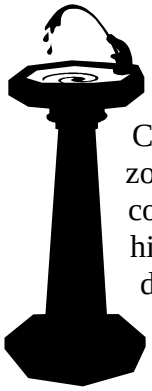


There are a number of public-owned areas in the county. These include: parks; schools; office buildings; and ball fields. Most of these contain wells, septic systems, and lawn/gardens. Officials responsible for these areas should be acquainted with recommendations in the Residential portion of this plan so they can be good stewards of the environment.

Land use: Municipal systems

- Drinking Water

About 44% (Idaho Department of Commerce - County Profiles of Idaho - 2000 data) of the Cassia residents rely on municipal systems for their drinking water. All of the municipal systems in Cassia County use groundwater as their sole source of drinking water. Municipal drinking water systems are provided by the cities of: Burley; Declo; Albion; and Oakley.



The Idaho Department of Environmental Quality, in compliance with the 1997 revisions to the "Safe Drinking Water Act" has completed Source Water Assessments for all municipal drinking water systems in Cassia County. These assessments identify public drinking water sources, delineate zones of groundwater contribution to those sources, identify "potential" contamination sources within those areas and rate those sources on a scale of high, medium or low in terms of their vulnerability to contamination. These delineations represent sensitive areas (Drinking Water Protection Areas) in which it is assumed that, should a contaminant enter the groundwater within them it is likely to adversely affect drinking water quality of those systems drawing water from them.

These delineated sources of municipal drinking water are recognized as special and sensitive areas in Cassia County. This committee therefore makes the recommendations in the following table.

Table 8: Municipal Systems - Drinking Water:

Issue/problem	Recommendations
Land uses within areas that supply municipal drinking water.	Local authorities need to recognize that land uses in these special areas can impact the quality of municipal drinking water.
	Land uses should continue to be monitored.
	The potential for increased contamination must be considered before making land use changes. A computer program, Geographic Information System (GIS), has been provided to county officials to provide information during these decision-making processes.

The Source Water Assessments for Cassia County municipal drinking water systems are available from the Idaho Department of Environmental Quality office in Twin Falls (736-2190). "Delineation and Potential Contaminant Source Location Maps" for Cassia County are found in the Appendix.

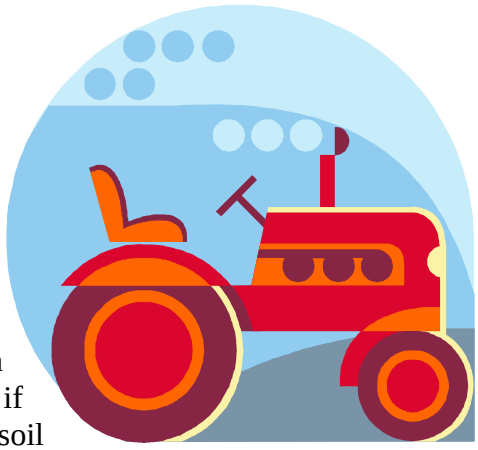
Land use: Municipal Systems

- Wastewater Land Application

Municipal land application is one of the few sources of nitrate that is already under direct regulatory requirements. Waste treatment facilities are required to obtain a National Pollution Discharge Elimination Systems (NPDES) permit from the Environmental Protection Agency (EPA) to discharge into waters of the state. If the wastewater is applied to land, a Waste Water Land Application Permit (WWLAP) is required from the Idaho Department of Environmental Quality.

Land use: Agriculture

- Croplands



Agriculture is the dominant land use in the county with approximately 266,095 acres under irrigation (Idaho Department of Commerce - County Profiles of Idaho - 1997 data). The major sources of nitrate from agricultural activities come from all forms of fertilizers, legumes and mineralization of organic matter. Nitrogen not utilized by plant growth is stored in the soil and can be leached to groundwater as nitrate, if sufficient water is available to move it through the soil profile. This water may be due to over- application or mis-timed irrigation, or from natural precipitation. Both irrigation and nutrient management must be considered to address the nitrate leaching concerns in irrigated agriculture.

Table 9: Agriculture – Croplands:

Issue/problem	Recommendations
Irrigation scheduling	1) Balance irrigation applications with crop needs and soil characteristics throughout the irrigation season. 2) Consult with one of the numerous sources of daily or weekly irrigation information: * AGRI-MET web page (www.usbr.gov) * UI Cassia County Extension office (878-9461)
Irrigation equipment	Continually maintain the entire irrigation system.
Applying fertilizer, manure, or compost	1) Make sure a soil test and/or plant tissue test is performed. Don't let anyone apply nitrogen to your crops without this information! 2) Test for nutrient content of manure or compost. 3) Get more than one professional opinion: * UI Cassia County Extension office (878-9461) * Soil Conservation Districts (678-1255) * Fertilizer salesman * Crop fieldmen 4) Apply fertilizer, manure, or compost: * at the proper time * at the proper rate * followed by proper irrigation
Crop rotations	Use crop rotations that will salvage residual nutrients, including those from previous nitrogen-fixing crops.

Sources of information for agriculture

One office houses the following agencies at the Burley Service Center of the United States Department of Agriculture: 678-1255

Natural Resource Conservation Service (NRCS) (formerly SCS)
Farm Service Agency (formerly ASCS)
East and West Cassia Soil Conservation Districts (SCDs)

Idaho Assoc. of Soil Conservation Districts (IASCD) in Boise 338-4321

Idaho Department of Agriculture (ISDA) in Boise 332-8599

University of Idaho - Cassia County Extension office
Extension Educator 878-9461

Cassia County Planning & Zoning 878-7302

Land use: Agriculture

– Abandoned Wells

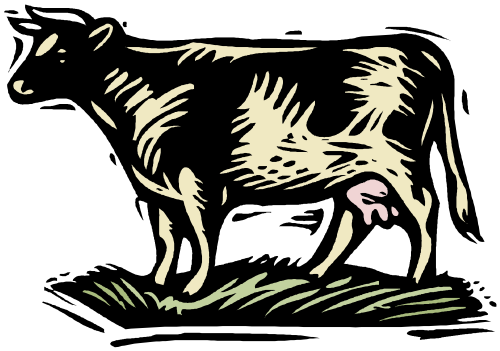
Over the years, a number of wells have been abandoned in agricultural areas for a variety of reasons. Although generally overlooked and forgotten, these wells provide a direct connection to the drinking water supply. Abandoned wells must be properly closed in order to stop continued/future contamination.

Table 10: Agriculture - Abandoned Wells:

Issue/problem	Recommendations
Use discontinued: *poor water quality *low volume *bad construction	Contact IDWR (736-3033) and use their procedures for properly abandoning a well.

Land use: Animal feeding operations

An Animal Feeding Operation (AFO) is officially defined as the holding or confining of animals in buildings, pens or lots. Nutrient management plans are required of the dairy industry. So, far, these plans have not been required for ranching operations. In addition to these dairy plans, numerous regulations for protecting groundwater are in place for larger AFOs regarding solid and liquid effluents.



Consideration must also be given to those living on an acreage (2-5 acres) who raise just a few animals for 4-H projects, riding pleasure, supplemental food sources, etc. Many of the same groundwater concerns exist for these smaller operations, yet they do not fall under state or federal regulations. Best Management Practices for these unregulated acreages should also be followed. Those practices of most interest to the acreage owner are related to surface water and composting of waste material.

Table 11: All Animal Feeding Operations:

Issue/problem	Recommendations
What regulations apply?	Depending on the location and number of animals, regulations may exist for the: subdivision – read your covenants; county – contact County Planning and Zoning (878-7302); and/or the state – contact the Idaho Department of Agriculture (332-8500).

Table 12: Small Animal Feeding Operations:

Issue/problem	Recommendations
Surface Water	1) *Runoff* – Grade the animal areas so that "good" water (runoff from clean surfaces and storm waters) can not contact manure or stored feed products. 2) *Mixing of waters* – If "dirty" water (carrying food or animal waste) and storm waters become mixed, this water should be diverted and treated, not just ponded.
Composting	Manure, excess bedding materials, and yard waste should be formed into a compost pile at a high point in the area. Composting benefits include: stabilization of nutrients; a lower salt index; and a more consistent product. For more information, contact the UI Cassia County Extension office (878-9461).

Table 13: Large Animal Feeding Operations:

Issue/problem	Recommendations
Surface Water	1) *Runoff* – Grade the animal areas so that "good" water (runoff from clean surfaces and storm waters) can not contact manure or stored feed products. 2) *Mixing of waters* - If "dirty" water (carrying food or animal waste) and storm waters become mixed, this water should be diverted and treated, not just ponded.
Composting	Manure, excess bedding materials, and yard waste should be formed into a compost pile at a high point in the area. Composting benefits include: stabilization of nutrients; a lower salt index; and a more consistent product. For more information, contact the UI Cassia County Extension office (878-9461).
Wastewater Effluent	1) *New lagoons and conveyance facilities* – should be designed and constructed in accordance with state standards to minimize leakage of stored wastewater. 2) *Existing lagoons and conveyance facilities* – should be redesigned and/of modified to meet state standards to minimize leakage of stored wastewater. 3) *Lagoons and conveyance facilities* should be designed for surface water runoff, corral water, and waters that have contacted manure or feed. 4) *Analysis* – occasionally have the lagoons tested for nutrients. 5) *Irrigation* – Irrigate these waters to provide both a hydraulic and nutrient balance. (Follow the recommendations in the agriculture portions of this plan.) 6) *Cleaning out pond sediments* - Best Management Practices (BMPs) cited in the facility Nutrient Management Plan, or applicable regulations, should be followed when cleaning out sediments from lagoons and holding ponds to prevent damage to the seals or structures.

Issue/problem	Recommendations
	7) *Storing pond sediments* – Follow the recommendations below for Solid Manure Management.
Solid Manure Management	1) *Manure storage* – Manure should be stored at a site which will minimize storm runoff and ponding. It should also be conveniently located in regards to equipment access and other compost materials. 2) *Compost* – Manure, excess bedding materials, and yard waste should be formed into a compost pile at a high point in the area. Composting benefits include: stabilization of nutrients; a lower salt index; less material; easier handling; and a more consistent product. For more information, contact the UI Cassia County Extension office (878-9461). 3) *Analysis* – Analyze the manure/compost for its nutrient values before applying to crops.
Feedyard Surfaces	1) *Drainage* – Direct the drainage to adequately constructed effluent facilities. 2) *Surface seal* – Maintain the surface seal while removing manure and scraping the feedlot pens. 3) *Grades* – maintain grades on existing corrals to provide drainage and prevent ponding within the corrals. 4) *Upgrades* – Upgrade facilities to meet accepted BMPs.

Land use: Recharge

Recharge is defined as the replenishment of ground water in an aquifer. It can be either natural or artificial. Examples of naturally occurring recharge include water leaching from canals, ponds, streams, lakes, or any low lying area. Artificial recharge is associated with man-made projects such as injection wells or constructed pond systems. These man-made projects are carefully monitored and require governmental permits. Depending on the specific conditions, recharge may either improve or degrade the groundwater quality.

Section VII: Implementation Tasks

A. General

1. Implementation will initially rely on education. In addition to writing this plan, the Committee developed a brochure titled “Private Well Owners”. Publications from the Idaho Department of Environmental Quality (“Homeowner’s Guide to Septic Systems”) and the University of Idaho (“Watering Home Lawns and Landscapes” and “Quality Water for Idaho – Nitrate and Groundwater”) will also be distributed. Contact information for the Home*A*Syst program materials will also be made available.

2. It is assumed that once people are aware of the environmental consequences of certain practices and situations they will seek alternatives to reduce the likelihood of groundwater contamination.

3. Further implementation of this plan will largely be accomplished through the efforts of a number of governmental groups and agencies.

4. The Committee encourages the continued efforts to monitor groundwater and to gather information pertinent to practices and activities that will protect groundwater.

5. The Committee supports the Federal Clean Water Act – Section 319 venture now (February 2004) in the proposal phase. Encouragement is also given to the implementation of Best Management Practice projects initiated by groups such as the Soil Conservation Districts (SCDs), Natural Resource Conservation Service (NRCS), and the Soil Conservation Commission (SCC). These projects can also involve the Idaho Department of Environmental Quality (IDEQ), Idaho Department of Water Resources (IDWR), Idaho State Department of Agriculture (ISDA), University of Idaho (UI), and local canal companies.

6. The Committee supports the implementation of the Idaho Association of Soil Conservation District's Home*A*Syst program.

B. Implementation Funding

1. Minimal funding is currently available specifically for the implementation of this management plan.

2. Although dedicated funds are not available, there are a number of grant funding sources and low-interest loans available for addressing certain aspects of the plan. All these funding options have their own eligibility requirements, application procedures, and conditions for application. Most grants and loans are competitive in nature and proposed projects compete with other proposals submitted throughout the state or nation.

3. Specific projects, such as those funded by Federal Clean Water Act – Section 319 money, will provide education and demonstrate best management practices that will improve local groundwater. In these projects, in-kind money or services would likely be provided by groups such as:

    a. Idaho Department of Environmental Quality (IDEQ) – The IDEQ administers the Idaho State Groundwater Quality Protection Act and implements the groundwater quality protection requirements for federal and state agencies, cities, counties, industry, and citizens. Monitoring and assessment of groundwater data is one of the primary areas of work.

b. Idaho State Department of Agriculture (ISDA) – In addition to monitoring, the ISDA is involved with the identification of existing agricultural management practice problems. They develop and implement alternatives for such practices.

c. Idaho Department of Water Resources (IDWR) – This department administers surface and ground water programs and activities that are predominately related to water supply issues. The IDWR also has responsibilities for ground water quality in areas such as Statewide Monitoring, Managed Recharge, and Injection Wells.

d. Soil Conservation Districts (SCDs) – SCDs are administered and coordinated by the Idaho Soil Conservation Commission.

e. Natural Resource and Conservation Service (NRCS) – This agency is managed by the United States Department of Agriculture. The NRCS provides technical and financial assistance that will help land operators in the planning and implementation of nutrient, pest and irrigation management plans designed to protect groundwater.

f. The University of Idaho (UI) – The University of Idaho develops publications and provides education on a wide range of topics. Local assistance can be found at the UI Cassia County Extension office.

Section VIII: Evaluation of Management Plan Progress and Success

Ultimately the goal of this plan is to reduce the contamination of nitrate in the aquifer supplying Cassia County. Due to the slow nature of ground water movement, it is not anticipated that quantitative reductions in nitrate levels will occur in the early implementation phases of the plan. Therefore, short-term goals are primarily qualitative in nature. These goals are essentially educational in nature, with emphasis on grade school students (with school district approval). In the long-term, continued sampling and data evaluation by IDEQ should show the positive results of a more knowledgeable community. The following table shows the schedule of the activities anticipated by the Committee.

Table 14: Implementation Project Schedule:

Time Frame		Topic	Responsible Party
2004	Annual		
X		Purchase a portable testing unit and sample bottles for analyzing nitrate in drinking water samples.	IDEQ
X		Advertise and then provide free nitrate analysis of domestic well water at multiple sites throughout the county.	IDEQ and Committee volunteers

Time Frame		Topic	Responsible Party
2004	Annual		
X		Make educational presentations to local groups using the following materials: ▪ this management plan ▪ a brochure written by this committee ▪ publications from UI and IDEQ ▪ poster board display	IDEQ and Committee volunteers
X	X	Ask for approval from the school district to make presentations and send home information with students.	IDEQ and Committee volunteers
	X	Receive updates on local Federal Clean Water Act – Section 319 ventures, if funded.	Various agencies
	X	Receive updates on the status of the Home*A*Syst program.	Idaho Association of Soil Conservation Districts